APLS, Central Chapter

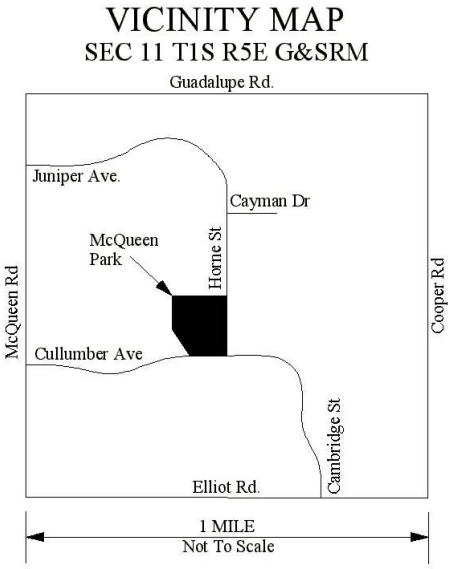
Center of Population Monument Project

Article for the Arizona Surveyor Magazine

AZ Center of Population Monument

A call for help to all APLS members to invite everyone to the dedication ceremony

Dedication Ceremony
Monday, February 16 2004, 10 a.m.
McQueen Park, Gilbert AZ*



The Arizona Center of Population Monument Project (COPM) is a cooperative multi-organizational event showcasing the technological adaptations in land surveying, mapping and GIS. Many federal, state and local entities, both government and private, are involved. The project demonstrates how all of our various organizations have the abilities to work together in a meaningful way. More specifically, it is a publicity event to bring our abilities to the public eye. It is an excellent opportunity to debut ourselves as professionals.

How can the general membership of APLS help? Easy! We are nearing completion on this project, but need help contacting as many people and agencies in the state as possible. We would like to extend an invitation to all to enlist their involvement by providing maps of their GIS and Survey Control Networks. We want to contact all county and city GISers and surveyors. Mike Magyar is the coordinator for the maps and invitations list. He may be contacted at:
mikemagyar@earthlink.net
(480) 213-6101

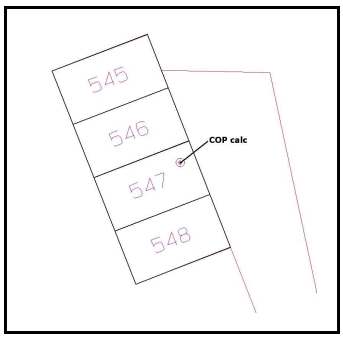
Following is an excerpt from the American Congress on Surveying and Mapping (ACSM) web page about the National Center of Population Monument Project:

> *In a project co-sponsored by NOAA's National Ocean Service (NOS), the Census Bureau, and the ACSM, many states are in the process of officially monumenting their Year 2000 Center of Population by setting commemorative markers. Most recently, Missouri, New Jersey, and Washington have set and performed GPS observations of their 2000 Census Center of Population monuments. In a cooperative effort, the Census Bureau provides the location of the state population centers, and NOS provides the guidelines for placement of the marker. ACSM coordinates the monument setting and observation performed by state professional surveyors. This is an excellent example of what collaboration between the private sector and Federal, state and local government surveying and mapping professionals can achieve. It is expected that all state Center of Population sites will be included in NOAA's National Spatial Reference System, which will allow surveyors and others to utilize the markers.*

National Society of Professional Surveyors (NSPS) member Chuck Paddack, first introduced the idea of monumenting Arizona's COPM to APLS at a state level board meeting. Paddack then brought the idea to the chapter level at a Central Chapter meeting in 2003 to enlist additional help.

In December 2003, Mike Magyar, Steve Duryea and Brian Fisher started work on the first step of the process, the site selection, by determining exactly where the calculated position was located on the ground. To do this Fisher plotted the latitude and longitude in a USGS topo map program. Once the section, township and range was determined (Section 3, Township 1 South, Range 5

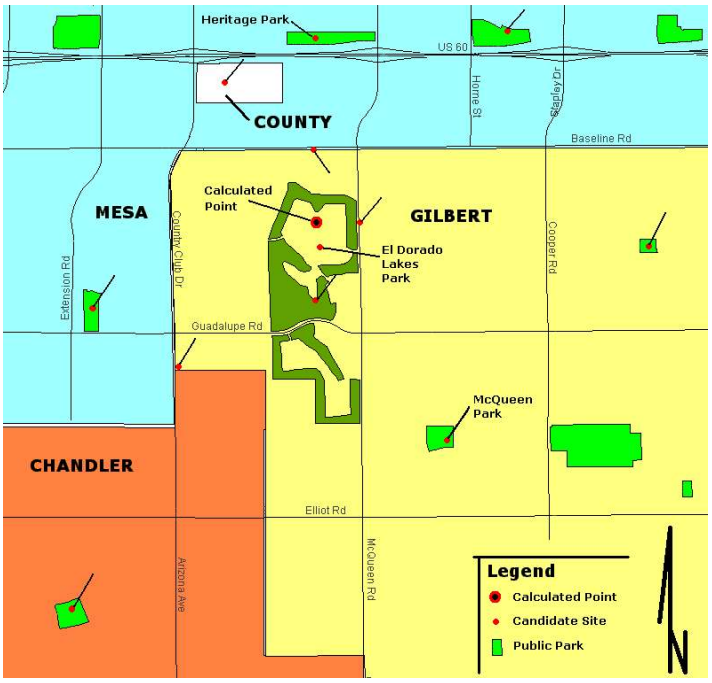
East, G&SRM), Fisher researched the plat for the area (El Dorado Lakes Golf Community, Book 366 Page 15 MCR). Geodetic positions of the monuments controlling the plat were obtained from Salt River Project (SRP) and used to tie the US Census coordinate and the plat into one mapping system. The SRP data is managed by Adrian Burcham and the web page is managed by Kevin Diggins. http://www.surveyorsresourcepage.com



Based on these calculations, the point falls in the back yard of lot 547. According to ACSM guidelines, the site selection should conform to the following criteria as much as possible: as close to the computed coordinate as possible, a "GPS-able" site (e.g., clear of obstructions 15˚ above the horizon), located on a publicly accessible site (e.g., town park, road right of way, etc.). These are fairly loose guidelines, especially the “as close ... as possible” comment. Additional research was needed to get a relative idea of how close “close” is.

We searched NGS data sheets for states that we knew had completed the project and found the following distances from the computed positions. Louisiana set theirs within 293 feet, but from there the distances increase dramatically. New Jersey set theirs at 1.1 miles, Georgia at 1.6 miles, Maryland at 1.7 miles, Virginia at 1.9 miles, Ohio at 6.3 miles, Missouri at 7.9 miles, and Washington at 13.4 miles. We instantly realized that this project would be a paradigm shift from the ‘typical’ survey monument “accept” or “not accept” dilemmas! It’s not exactly in compliance with Arizona Minimum Standards, a relative positional tolerance of 0.25 feet, plus 100 parts per million. This roughly computes to an elliptical shape 206 feet by 167 feet, as the axes of the state are about 390 miles north-south and 315 miles east-west.

We looked at 14 sites that were “close”, which we determined to be within a mile or two of the calculated position. We used the Maricopa County Assessors interactive GIS web site to research all the parks in the area, and produced a map for field reconnaissance. It was interesting to us that the calculated point fell so close (no pun) to several municipal borders. In fact, there were four possible municipal entities within a mile radius: Gilbert, Mesa, Chandler and Maricopa County. Sites were looked at in all four areas, and our choices were narrowed down to two ‘best’ candidate sites. The first being in a private park in the El Dorado Lakes subdivision, because of its’ proximity to the calculated position. The second in McQueen Park, as it was both a public facility, and within the borders of Gilbert. There is actually a closer public park than McQueen, Heritage Park, in Mesa (due north of the calculated position), but it was the site committee’s recommendation that the public park should be within the same municipal boundary as the calculated position.



Both the Town of Gilbert and the homeowner’s association of El Dorado Lakes have expressed interest in hosting a monument site, and preliminary site plans have been submitted to both. *The Gilbert Town Council meets on January 20 to review the APLS proposal, and pending their approval, McQueen Park will be the location of the Arizona COPM.

The decision to put the COPM in McQueen Park verses the El Dorado Lakes park was a difficult one to make. McQueen was chosen as a first option for several reasons. McQueen is the 'nearest to the census calculated position' public park within Gilbert. McQueen is publicly accessible and has a high volume of public traffic. McQueen offers excellent parking with over 100 spaces. As this project is fundamentally a publicity event for APLS, the site that offered the greatest public exposure and access is preferable.

We would especially like to thank Karl Kohlhoff, President of the El Dorado Lakes Community Association. He and his staff were very friendly and willing to help us. Even if their site is not selected, they at a minimum will be presented with a commemorative monument that they can display in their community center.

We would also like to thank the staff at the Town of Gilbert. Within only a few hours of the time we first walked in off the street to the Plan Review counter, we had a meeting scheduled with George Pettit the Town Manager. He was more than instrumental in expediting our request to build the COPM. We were put in contact with Maury Ahlman in the Parks Department, that day. Ahlman provided as-built drawings very quickly for our design. Pettit received our design directly, and within a week had it scheduled for the Town Council review. After our experience with the town, it is very easy to see how Gilbert was recently named the fastest growing community in the country.

Another task in this project was to design a monument. Per ACSM guidelines, an eight-inch commemorative brass disk needs to be installed. The design is up to the state, and logos of all the agencies involved may be included on the disk. Gene Trobia and Jason Howard from the Arizona Geographic Information Council (AGIC) assisted in getting us the AGIC logo. Brian Fisher designed the rest of the monument. Tim Klaben, from Berntsen International Inc., required the monument design to be submitted in an AutoCAD format. Raster images of USGS maps were imported into CAD and then digitized for the Arizona and Maricopa County borders. The center of population point is also accurately depicted in relation to the county and state outline. The NGS and ACSM logos will also appear on the disk.

The COPM monument will be set in the center of a three-foot diameter concrete slab. Around the COPM monument will be four 4-inch brass disks marking the north, south, east and west directions. These monuments are being provided by Anthony Trujillo, General Manager of Holman's of Tempe.

Arizona's Center of Population
Census 2000

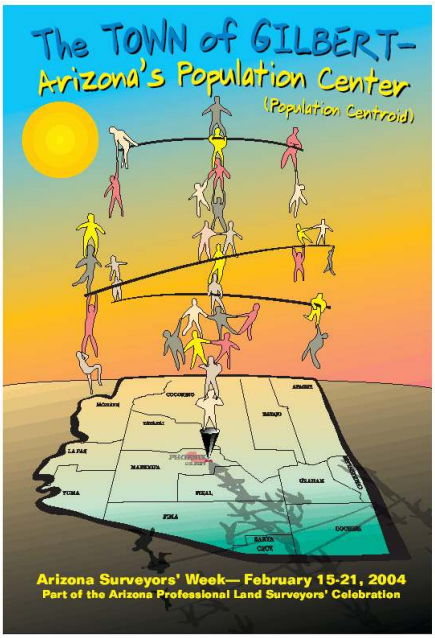
This survey monument, set in February 2004 by the Arizona Professional Land Surveyors Association, marks an offset to the symbolic center of population for the state of Arizona. This Center of Population Point is where an imaginary, flat, weightless and rigid map of the state of Arizona would balance perfectly if all its 5,130,632 residents (based on the census 2000) were of identical weight. The actual computed location of the population center lies approximately 1.39 miles northwest of this monument, at 33º 22' 24" North Latitude and 111º 49' 43" West Latitude.

For Survey information, go to the National Geodetic Survey web site at:
www.ngs.noaa.gov

Maricopa County Department of Transportation (MCDOT) is providing a sign. The sign will have information about the point, and a link to the APLS web page. Special thanks go to John Rose and Brian Dalager of MCDOT for helping expedite the sign ordering process.

The construction of the monument is scheduled for the weekend of February 7. Students from the Phoenix College Land Survey program are going to get a chance to participate in the construction during one of their labs. A van is being provided from the school to transport the students to the project site. Students this semester are enrolled in 'Route Surveying and Construction Layout' and 'Survey I & II' classes. Special thanks go to the instructors in the program, Jim Cristea and John Rose, for helping to organize this.

Rudy Stricklan and Scott Terry designed a poster for the event. The committee thought that this was a perfect example of how GISers have a wonderful ability depicting spatial data in a way everyone can understand. We will have several posters and maps on display at the dedication ceremony showing all types of survey and GIS applications from around the state.



Anthony Trujillo and the staff at Holman's will be bringing out several of the latest and greatest survey instruments and GPSs to display during the dedication ceremony.

This should be a great event, and all are welcome to attend. Again, we need everyone's help so we can get the word out all over the state. This is truly a project where we can bridge the gaps, and open the friendly lines of communication between all the geospatial professions. See you on February 16th!

Brian Fisher, RLS

Web Links:
http://www.acsm.net/statecenters.html
http://www.ngs.noaa.gov/INFO/COP/
http://www.census.gov/geo/www/cenpop/county/coucntr04.html
http://agic.az.gov/